

GENERAL INDEX TO VOLUME XIV.

[NOTE.—Names of Authors and participants in debate are printed in SMALL CAPS. ; Titles of Papers are printed in *italic type.*]

	PAGE
Abt railways	715
Agricultural colleges	908
ALDEN, G. I., disc., performance pumping engine	1406
" " " technical education in the United States	1009
ALDRICH, W. S., disc., evaporative surface condenser	694
" " " limitation of engine speed	813
" " " performance of street railway power plants	1168
<i>Analysis of the shaft governor</i> , F. M. Rites	92
<i>Anhydrous ammonia gas as a motor power</i> , T. W. M. Draper	762
Annual address, 1892, Chas. H. Loring	52
<i>Apparatus for metering steam and registering work of steam engines</i> , F. Seiler	751
Appendix V., to report on standard tests and methods of testing materials ..	1263
BABCOCK, GEO. H., disc., an interesting boiler explosion	130
" " " gauge for sheets and plates	34
BAKER, SIR BENJAMIN, disc., tests of locomotive at Purdue	851
BALDWIN, S. W., disc., unification of methods of tests	565
BALL, FRANK H., Compression as a factor in steam engine economy	1067
" " disc., analysis of shaft governor	114
" " " operation of centrifugal machines	1216
" " " performance pumping engine	1405
" " " recording pressure gauge	330
BALL, W. D., disc., performance of street railway power plants	1165
BANCROFT, J. S., disc., electric traveling crane	377
" " " a new graduating radiator	409
" " " variable speed power transmission	485
BARR, JOHN H., disc., compression as a factor	1078
BARRUS, GEO. H., A coal calorimeter	816
" " disc., performance pumping engine	1407
" " " performance of street railway power plants	1157
BATTELLE, J. G., urges gauge for sheets and plates	26
BAXTER, W., on compound locomotive	1188
Bedson, rod rolling mill	590
Belts, driving, tests of	59
BINSSE, H. L., disc., variable speed power transmission	485
BISSELL, G. W., The strains in lathe beds	147
Boiler explosion, an interesting	118
BORRIES, A. VON, The development of the compound locomotive	1172
BRECKENRIDGE, L. P., disc., a new graduating radiator	417
BRIGG, THOS. H., Haulage by horses	1014

	PAGE
BRISTOL, W. H., New recording pressure gauge for extremely low ranges of pressure.....	325
BUTCHER, J. J., disc., an interesting boiler explosion.....	132
Cable making, improvements in the art of.....	626
Calorimeter, a coal.....	816
Cams, new process of cutting.....	82
Car mileage, cost of.....	1113
CARPENTER, R. C., Comparative variation in economy with change of load in simple and compound engines.....	426
CARTWRIGHT, ROBERT, disc., an interesting boiler explosion.....	145
“ “ “ improvement of engineering profession.....	519
CARY, A. A., disc., a coal calorimeter.....	824
Centrifugal machines, operation of.....	1192
CHASE, W. L., A general engineering classification and index.....	780
CLARKSON, T., disc., collection of dust in workshops.....	705
Classification and index, a general.....	780
CLEMENS, ERNEST V., memorial notices.....	1450
Coal calorimeter, A, G. H. Barrus.....	816
COLE, J. WENDELL, disc., technical education in the United States.....	1007
Collection of dust produced in workshops, R. Kohfahl.....	696
Columbus or fare indicator.....	619
Condenser, a surface.....	690
Contribution to the theory of steam engine, V. Dwelshauvers-Dery.....	572
Committee on locomotive tests, report.....	1312
Comparative variation in economy with change of load with simple and compound engines, R. C. Carpenter.....	426
Compression as a factor in steam engine economy, Frank H. Ball.....	1067
Compound locomotive, development of.....	1172
COOPER, JOHN H., disc., compound locomotive.....	1186
“ “ “ improvement of engineering profession.....	506
“ “ “ strains in fly-band wheels.....	264
Crane, electric.....	368
Cream, separation by centrifugal force.....	1200
Cronmeyer, urges gauge for sheets and plates.....	28
Cost of horse-power.....	1100
Cost of petroleum.....	1102
COTTRELL, CALVERT B., memorial notice.....	1447
Counterbalancing of engines.....	1217
Counterbalancing, centrifugal machines.....	1205
Coxe, E. B., disc., a coal calorimeter.....	824
“ “ “ technical education in the United States.....	1011
DANIELS, FRED. H., Rod rolling mills and their development in America ..	583
“ “ “ An interesting boiler explosion.....	118
DARLING, E. A., disc., improvement of engineering profession.....	521
DAVIS, E. F. C., disc., gauge for sheets and plates.....	34
DEBRAY, PAUL, urges unification of methods of tests.....	562
DENTON, J. E., The performance of a triple expansion pumping engine with and without jackets.....	1340

	PAGE
DENTON, J. E., disc., an interesting boiler explosion.....	138
" " " tests of locomotive at Purdue.....	848
<i>Development of the compound locomotive—A. Von Borries.....</i>	1172
Difference machine, a simple.....	310
DINGEE, W. W., disc., operation of centrifugal machines.....	1220
Drainage machinery, in the Netherlands, Note on.....	635
DRAPER, T. W. M., Anhydrous gas as a motive power.....	762
" " disc., improvement of engineering profession.....	511
DURFEE, W. F., The history and modern development of the art of inter- changeable construction in mechanism.....	1225
" " disc., improvement of engineering profession.....	514
" " " technical education in the United States.....	1008
DURAND, W. F., the limit of propeller efficiency as dependent on the sur- face form of the propeller.....	65
Dust in workshops.....	696
DWEISHAUVERS-DERY, V., Contribution to the theory of the steam engine.....	572
Dynamometer car for locomotive tests.....	1328
" " for lathe.....	153
Ebonite in water meters.....	676
<i>Effect of steam jacket on high speed engines, R. C. Carpenter.....</i>	426
Efficiency tests of locomotives.....	1319
EGLESTON, T., reports on gauge for sheets and plates.....	29
Electric traveling crane.....	368
EMERY, C. E., presents report on physical and mechanical tests, exposition of 1893.....	41
Engerth locomotive.....	653
Engine speed, limitation of.....	806
<i>Evaporative surface condenser, J. E. Fitts.....</i>	690
<i>Experiences in the operation of rack railways, A. Schneider.....</i>	708
<i>Experimental determination of the heat generated per candle power by oil and gas lamps, D. S. Jacobus.....</i>	331
Explosion, an interesting.....	118
FABER DU FAUR, disc., suction water under pressure.....	175
<i>Fare indicator and receipt controller, C. Pieper.....</i>	619
FARMER, MOSES G., memorial notice.....	1445
Flanges, committee report.....	26 and 48
Flange standards, committee on, report.....	48
Flyband wheels, strains by centrifugal force.....	251
FITTS, JAMES H., an evaporative surface condenser.....	690
" " memorial notice.....	1449
FRITZ, JOHN, correspondence with.....	15
GABRIEL, W. A., New process of cutting cams.....	82
Garrett rod-rolling mill.....	604
Gauge for low pressures.....	325
Gauge for uncoated metallic sheets.....	26
<i>General engineering classification and index, W. L. Chase.....</i>	790
GEMMELL, JAS. G. R., memorial notice.....	1447

	PAGE
Geyer, photometer	339
GIBBS, GEO., disc., compound locomotive	1190
“ “ “ standard tests of locomotives	1338
“ “ “ tests locomotive at Purdue	853
GOODELL, JOHN M., disc., ebonite water meters	688
GOODMAN, W. H., disc., technical education in the United States	1010
Goss, W. F. M., Tests of the locomotive at the laboratory of Purdue University	826
Governor, shaft	92
Graduates in engineering, number of	963
GREEN, S. M., disc., a new graduating radiator	417
“ “ “ variable speed power transmission	485
GUILLEAUME, EMIL, Improvements in the art of cable making	626
HAGUE, C. A., disc., an interesting boiler explosion	143
HALL, A. F., disc., performance of pumping engines	1402
“ “ “ tests on triple engine at Mass. Inst. of Tech.	394
HARTNESS, JAS., disc., recording pressure gauge	329
HASKINS, JOHN F., memorial notice	1444
<i>Haulage by horses</i> , T. H. Brigg	1014
HAWKINS, JOHN T., A new graduating steam radiator	401
“ “ “ disc., an interesting boiler explosion	127
“ “ “ “ gauge for sheets and plates	34
“ “ “ “ improvement of engineering profession	502
HELE-SHAW, H. S., disc., haulage by horses	1063
HENNING, G. C., reports, Vienna conference on testing materials	561
“ “ “ disc., improvement of engineering profession	523
“ “ “ “ milling machine to replace planer	542
“ “ “ “ recording pressure gauge	330
“ “ “ “ suction water under pressure	181
HERRMANN, GUSTAV, The operation of centrifugal machines	1192
HIBBARD, H. W., disc., compound locomotive	1185
HILDENDRAND, W., disc., rack railways	748
HILL, GEO., disc., economy of simple and compound engines	468
“ “ “ “ improvement of engineering profession	507
“ “ “ “ new graduating radiator	419
HINDLEY's index plate	1234
<i>History and modern development of the art of interchangeable construction in mechanism</i> , W. F. Durfee	1225
HOLLOWAY, J. F., introduces T. F. Rowland	38
“ “ “ disc., electric travelling crane	379
“ “ “ “ interesting boiler explosion	130
“ “ “ “ gauge for sheets and plates	36
“ “ “ “ machine shop construction	538
<i>Horses, haulage by</i>	1014
HUET, A., Note on the drainage machinery of the Netherlands	635
HUGO, T. W., performance of street railway power plants	1082
HUNT, R. W., disc., an interesting boiler explosion	146
HUTTON, F. R., disc., haulage by horses	1060
<i>Hydraulic reaction motors</i> , De Volson Wood	266

	PAGE
Illuminants, efficiency of.....	362
<i>Improvement of status of engineering profession</i>	487
<i>Improvements in the art of cable making</i> , Emil Guillaume.....	626
Inertia, governing	95
Index and classification, a general	780
Instruction in engineering	972
Interchangeable construction, history of.....	1225
<i>Interesting boiler explosion</i> , F. H. Daniels.....	118
Iona, engine tests.....	1366
JACKSON, D. C., disc., performance of street railway plants.....	1163
JACOBUS, D. S., Experimental determination of the heat generated per candle power by oil and gas lamps	331
" " disc., compression as a factor	1078
" " " the refrigerating machine of to-day.....	1434
" " " the refrigeration process and its proper place in thermodynamics	246
" " " tests on triple engine at Mass. Inst. Tech.....	395
JENKS, WM. H., disc., engineering classification and index	801
KAER, JOHN C., disc., an interesting boiler explosion....	144
KENT, WM., disc., ammonia as a motive power	778
" " " a coal calorimeter.....	821
" " " improvement of engineering profession.....	515
" " " performance pumping engine	1406
" " " technical education in the United States.....	1002
KERR, W. C., disc., economy of simple and compound engines	463
Klose locomotive system.....	672
KOHFAHL, R., Collection of dust produced in workshops.....	696
LAFORGE, F. H., disc., an interesting boiler explosion.....	129
Lamm's ammonia engine.....	768
Land grant colleges	908
LANZA, GAETANO, disc., strains in fly-band wheels	260
" " " standard tests of locomotives.....	1337
Lathe beds, strains in.....	147
LEVAN, W. B., disc., improvement of engineering profession.....	511
" " " an interesting boiler explosion.....	129
<i>Limit of propeller efficiency as dependent on the surface form of the propeller</i> , W. F. Durand.....	65
<i>Limitation of engine speed</i> , C. T. Porter.....	806
LINDE, C., The refrigerating machine of to-day.....	1414
LIPE, C. E., disc., milling machine to replace planer.....	543
Locomotive, compound.....	1172
Locomotive, tests of.....	826
Locomotive tests, report on.....	1312
<i>Locomotives operating by total adhesion on curves of small radius</i> , A. Mallet.	648
LORING, C. H., Steam engine in modern civilization (Address, 1892).....	52
LOW, F. R., disc., variable speed power transmission.....	484

	PAGE
LUX, FRIEDRICH, on water measurements with special reference to Schinzel's ebonite water meter.....	676
MCBRIDE, JAMES, disc., an interesting boiler explosion.....	126
Machine shop construction.....	527
Mahler, on coal calorimetry.....	822
MALLET, A., Locomotives operating by total adhesion on curves of small radius.....	648
MANNING, C. H., disc., an interesting boiler explosion.....	141
" " technical education in the United States.....	1007
MANSFIELD, A. K., disc., compression as a factor.....	1076
" " " Limitation of engine speed.....	812
MARTENS, A., disc., report of committee on standard tests.....	1260
Master Mechanics' Association Committee on locomotive tests.....	854
Meteor, engine tests.....	1364
Meter, Schinzel's water.....	676
Metering steam, apparatus for.....	751
MILLER, E. F., Tests on the triple engine at the Mass. Inst. Tech.....	381
Milling machine replaces planer.....	539
MOFFATT, EDWARD S., memorial notice.....	1449
Morgan rod mill.....	603
MORGAN, JAMES, memorial notice.....	1442
Muir cutters.....	512
NASON, C. W., report of committee on flange standardization.....	566
" " disc., an interesting boiler explosion.....	2129
National University.....	1001
Negative specific heat, De Volson Wood.....	75
Netherlands, drainage machinery.....	635
New graduating steam radiator, J. T. Hawkins.....	401
New process of cutting cams, W. A. Gabriel.....	82
NICHOLSON, WM. T., memorial notice.....	1451
NORRIS, R. VAN A., Tests of a pump receiving suction water under pressure.....	168
" " " disc., recording pressure gauge.....	828
Note on the drainage machinery of the Netherlands, A. Huet.....	635
Oil in boilers.....	143
Operation of centrifugal machines, G. Herrmann.....	1192
PARSONS, H. DEB., disc., suction water under pressure.....	175
PATTON, W. H., memorial notice.....	1442
PEABODY, C. H., Tests on the triple engine at the Mass. Inst. Tech.....	381
PEARSON, W. A., disc., gauge for sheets and plates.....	32
Performance of a triple expansion pumping engine with and without jackets, J. E. Denton.....	1340
Performance of an overhead traveling crane operated by a single electric motor, Anthony Victoria.....	368
Performance of street railway power plants, W. A. Pike, T. W. Hugo.....	1082
Petroleum, as fuel for boilers.....	1082

	PAGE
<i>Physical and mechanical tests at Exposition of 1893</i>	41
PIEPER, C., Fare indicator and receipt controller.....	619
PIKE, W. A., performance of street railway power plants.....	1082
Pipe flanges, scale for.....	49
PLATT, JOHN, disc., an interesting boiler explosion.....	138
PLATT, J. C., disc., a new graduating radiator.....	411
" " " suction water under pressure.....	176
Polytechnic schools.....	891
PORTER, H. F. J., disc., improvement of engineering profession.....	487
" " " technical education in the United States.....	1004
PORTER, CHAS. T., The limitation of engine speed.....	806
President's address, 1892.....	52
Proceedings New York Meeting.....	3
" Chicago Meeting.....	547
Propeller efficiency.....	65
Pumping engine, performance of at Laketon.....	1340
Purdue University locomotive.....	826
 Rack railways, operation of.....	 708
Radiator, a new graduating.....	401
<i>Recording pressure gauge for extremely low ranges of pressure</i> , W. H. Bristol.....	325
<i>Refrigeration process and its proper place in thermodynamics</i> , Geo. Richmond.....	183
<i>Refrigerating machine of to-day</i> , C. Linde.....	1414
Report of committee on standard tests and methods of testing materials ..	1258
Report of committee on tests, Exposition of 1893.....	41
Report on standard method of conducting locomotive tests.....	1312
RICHMOND, GEO., Notes on the refrigerating process and its proper place in thermodynamics.....	 183
" " a simple difference machine.....	310
RITES, F. M., an analysis of the shaft governor.....	92
" " disc., performance of street railway power plants.....	1166
Road test of locomotives.....	1328
ROCKWOOD, G. I., disc., economy of simple and compound engines.....	464
" " " performance of street railway power plants.....	1159
" " " tests on the triple engine at Mass. Inst. Tech.....	396
Rod rolling mills and their development in America, F. H. Daniels.....	583
ROELKER, H. B., disc., an interesting boiler explosion.....	130
ROGERS, W. S., disc., improvement of engineering profession.....	522
" " " milling machine to replace planer.....	539
" " " trains in lathe beds.....	165
ROOT, W. J., memorial notice.....	1443
 SEDERHOLM, E. T., disc., compression as a factor.....	 1080
SCHIEFFLER, F. A., disc., economy of simple and compound engines.....	467
" " " performance of street railway power plants.....	1163
SCHINZEL's ebonite water meter.....	676
SCHNEIDER, A., Experiences in the operation of rack railways.....	708
SEILER, FRANZ, apparatus for measuring steam and registering work of steam engines.....	 751
Serrell rod rolling mill.....	592

	PAGE
Shaft governor, analysis of.....	92
SHORTALL, JOHN G., disc., haulage by horses.....	1063
<i>Simple difference machine</i> , Geo. Richmond.....	310
Shop tests of locomotives.....	1324
SMITH, JESSE M., disc., gauge for sheets and plates.....	33
“ “ “ a new graduating radiator.....	410
“ “ “ economy of simple and compound engines.....	453
“ “ “ performance of street rail power plants.....	1161
“ “ “ recording pressure gauge.....	329
“ “ “ variable speed power transmission.....	483
SMITH, OBERLIN, disc., electric traveling crane.....	378
“ “ “ an interesting boiler explosion.....	141
“ “ “ gauge for sheets and plates.....	30
“ “ “ improvement of engineering profession.....	513
“ “ “ milling machine to replace planer.....	543
“ “ “ strains in lathe beds.....	162
“ “ “ variable speed power transmission.....	483
SORGE, A., disc., the refrigerating machine of to-day.....	1437
SPAULDING, H. C., variable speed power transmission.....	478
“ “ disc., electric traveling crane.....	378
“ “ “ improvement of engineering profession.....	515
Specific heat, negative.....	75
Speed, limitation of.....	806
Spherical candle power.....	357
Standards, committee's report.....	21
Standard tests of locomotives.....	1319
STANWOOD, JAS. B., Strains in the rims of fly-band wheels produced by centrifugal force.....	251
Steam engine, contribution to the theory of.....	572
<i>Steam engine in modern civilization</i> , C. H. Loring.....	52
Steam jackets, effect of.....	1356
Steam meters.....	751
<i>Strains in lathe beds</i> , G. W. Bissell.....	147
<i>Strains in the rims of fly-band wheels produced by centrifugal force</i> , J. B. Stanwood.....	251
STIRLING, ALLAN, disc., interesting boiler explosion.....	125
STRONG, G. S., disc., improvement of engineering profession.....	517
Suction air chambers for pumps.....	177
Suction water, under pressure to pump.....	168
Sulzer, engine tests.....	1367
SUPLEE, H. H., disc., compound locomotive.....	1190
“ “ “ rack railways.....	749
Surface condenser, an evaporative.....	690
SWEET, JOHN E., disc., machine shop construction.....	527
Taxameter, or fare indicator.....	619
<i>Technical education in the United States</i> , R. H. Thurston.....	855
Tests and testing materials, report of committee on.....	1258
<i>Tests of a pump receiving suction water under pressure</i> , R. Van A. Norris... ..	168
<i>Tests of driving belts</i> , S. Webber.....	59

	PAGE
<i>Tests of the locomotive at the laboratory of Purdue University, W. F. M. Goss</i>	826
<i>Tests on the triple engine at the Mass. Inst. Tech., C. H. Peabody, E. F. Miller</i>	381
Tests, on steam engines and machines, Exposition of 1893.....	41
THURSTON, R. H., technical education in the United States.....	855
“ “ disc., economy of simple and compound engines.....	450
“ “ “ heat generated by lamps.....	359
“ “ “ haulage by horses.....	1059
“ “ “ improvement of status of engineering profession....	497
“ “ “ tests on triple engine at Mass. Inst. Tech.....	397
Topical discussions and interchange of data—26th meeting.....	487
Total adhesion, locomotives operating by.....	648
Trade schools.....	894
Tudor radiator.....	415
Tuition fees in technical schools.....	913
Turbine water wheels.....	266
VANDERSTEGEN, ALFRED, disc., limitation of engine speed.....	811
“ “ “ collection of dust in workshops.....	705
<i>Variable speed power transmission, H. C. Spaulding</i>	478
VICTORIN, ANTHONY, Performance of an overhead traveling crane, operated by a single electric motor.....	368
VON BORRIES, A., Development of the compound locomotive.....	1172
“ “ “ disc., rack railways.....	747
WALWORTH, A. C., disc., new graduating radiator.....	412
<i>Water measurements, with special reference to Schinzel's ebonite water meter, F. Lux</i>	676
Water meter, Schinzel's.....	676
Weaving shed roof for machine shop.....	527
WEBBER, SAMUEL, Tests of driving belts.....	59
WEBSTER, JOHN F., memorial notice.....	1443
WENDT, ARTHUR F., memorial notice.....	1450
WHEELER, F. M., disc., suction water under pressure.....	176
WHEELER, S. S., reports on gauge for sheets and plates.....	29
WHITEHILL, ROBERT, memorial notice.....	1448
WINSHIP, J. G., disc., an interesting boiler explosion.....	145
WOOD, DE VOLSON, hydraulic reaction motors.....	266
“ “ negative specific heat.....	75
WOOD, M. P., disc., electric traveling crane.....	378
“ “ “ gauge for sheets and plates.....	31
“ “ “ variable speed power transmission.....	483
WOODBURY, C. J. H., disc., machine shop construction.....	535
WOODS, ARTHUR T., memorial notice.....	1443
WOOLSON, O. C., disc., an interesting boiler explosion.....	139
“ “ “ gauge for sheets and plates.....	31